REMARKS

The present application includes pending claims 1-6, 8-16 and 18. Claims 8-12 have been allowed. Claims 1-3, 5, 6 and 13-15 stand rejected, while claims 4 and 16 have been objected to. Claims 1 and 13 have been amended as set forth above. Reconsideration of the rejection of the claims is respectfully requested.

Claims 1-3, 5-6, 13-15 and 18 stand rejected under 35 U.S.C. 102(b) as being anticipated by United States Patent No. 3,858,145 ("Sulich"). Claims 2-3 and 14-15 were rejected under 35 U.S.C. 103(a) as being unpatentable over Sulich in view of United States Patent No. 5,714,728 ("Garneyer"). Claims 1-3, 5-6, 13-15 and 18 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Garneyer in view of United States Patent No. 5,086,861 ("Peterson"). In addition to the reasons set forth previously during the prosecution of the present application, the Applicant respectfully traverses these rejections for the reasons set forth below.

The Applicant first turns to the rejection of claim 1-3, 5-6, 13-15 and 18 under 35 U.S.C. 102(b) as being anticipated by Sulich. Sulich discloses "a magnetic circuit useful as an activator element for a Hall sensor or the like." Sulich at Column 1, lines 8-10. As shown in Figures 1 and 2 of Sulich, the magnet switch circuit 23 includes a magnet 26 associated with a keeper 27 of soft magnetic material. *See* Sulich at Figures 1 and 2 and column 4, lines 9-36. Optionally, the magnetic switch circuit includes a magnet 34. End surfaces of magnets 34 and 36 are substantially coplanar. *See* Sulich at Figures 1 and 4, and column 4, lines 54-60.

As clearly shown in Figures 1, 2 and 4 (particularly Figures 2 and 4), the magnets 26, 34, and 36 are all oriented such that their respective poles (i.e., "N" and

"S" poles) are all aligned in a vertical fashion. The alignment is such that the longitudinal axes of these magnets is coaxial with the magnetic switch circuit 23, the operating cup member 21, and coaxially aligned with the direction of movement of the longitudinal axis of the operating cup member 21. That is, the magnets are aligned in a parallel fashion with the longitudinal axis of the key mechanism 10.

However, Sulich does not teach, nor suggest, that each of the magnets has a "longitudinal axis that extends generally *perpendicularly*" to a longitudinal axis of the Hall switch, as recited in claims 1 and 13. Instead, as shown by the poles of the magnets in Figures 2 and 4 of Sulich, the longitudinal axes of the magnets of Sulich are parallel with a longitudinal axis of the key mechanism 10.

Further, even assuming, arguendo, that the longitudinal axis of the keeper 27 and/or disk 37 of Sulich was perpendicular to the longitudinal axis of the magnets 26, 34, or 36, Sulich still would not teach, nor suggest, *each* of "said first and second magnets... having a respective longitudinal axis that extends generally perpendicular to" a longitudinal axis of the switch, as recited in claims 1 and 13. Thus, the Applicant respectfully submits that Sulich does not anticipate claims 1-3, 5-6, 13-15 and 18 of the present application.

The Applicant also notes that Sulich does not teach, nor suggest, a "Hall effect switch [that] transitions between a non-actuated state when the carriage is at its non actuated position and an actuated state when the magnetic carriage is at its actuated position," as recited in claim 1. Rather, similar to other conventional switches, Sulich discloses a system in which the Hall effect switch is actuated when the magnetic field

detected at the Hall switch reaches a predetermined level. For example, Sulich discloses the following:

> [I]t was found that the localized magnetic field intensity decays very rapidly in a short distance in the region proximate the surface of the magnet. At the same time the magnetic field reversal will occur within the relatively short distance from the surface of the magnet. Thus, key mechanism having this structure can provide rapid switching of s sensor device and its associated circuit with a relatively short displacement of the operating parts.

Sulich at column 2, lines 47-56. In particular,

> It has been discovered that such a permanent magnet produces a magnetic field in space, in the vicinity of the aperture, which reverses direction at some distance from the surface of the aperture cylinder. The location of the field reversal is dependent on the properties of the permanent magnetic material and the disk geometry. This phenomenon is used in implementing this invention by effectuating a relative displacement of the permanent magnet and its associated sensor device to cause the sensor to be subjected to the field reversal as well as the change in the field intensity.

Sulich at column 2, lines 19-30. Further,

> An apertured disk magnet with pin core provides a very rapid field intensity change over a small displacement and also provides a field reversal. Thus, key mechanisms for magnet sensor operating such as Hall effect devices can be made in accordance with this invention which have very small

> displacement requirements thereby making increasingly high speed operation and low profile design possible.

Sulich at column 6, lines 19-27. Thus, Sulich discloses a Hall effect switch that is actuated when the magnetic field detected by the switch reaches a certain level. The magnets are positioned in proximity to the Hall effect sensor by the key mechanism, but the Hall mechanism is not necessarily actuated when the key mechanism is actuated. Sulich does not teach, nor suggest, a Hall effect switch that "transitions between a non-actuated state when [a magnet] carriage is at its non-actuated position and an actuated state when the magnetic carriage is at its actuated position," as recited in claim 1. Thus, claim 1 and the claims that depend from claim 1 are not anticipated by Sulich.

The Applicant notes that reference numeral 21 in Sulich is an "operating cup member," but not a boot seal, as recited in claim 2. Further, Sulich discloses that "a tubular permanent magnet 18 is mounted external to the upper portion of housing 12 so as to surround permanent magnet 17." Sulich at Column 3, lines 38-31. That is, this configuration is merely a magnet 18 that surrounds the magnet 17. However, Sulich does not teach, nor suggest, "a return *spring* for biasing the positional displacement of [a] magnet carriage," as recited in claim 3.

The Applicant next turns to the rejection of claims 2-3 and 14-15 under 35 U.S.C. 103(a) as being unpatentable over Sulich in view of Garneyer. Initially, the Applicant notes that Sulich does not teach, nor suggest, "first and second magnets... having a respective longitudinal axis that extends generally perpendicular to" a "first longitudinal axis," of the Hall switch as recited, for example, in claim 1. The Applicant notes that claims 2-3 depend from claim 1, while claims 14-15 depend from claim 13. Therefore,

claims 2-3 and 14-15 include all the limitations of the claims from which they depend. Garneyer et al. fails to overcome the deficiencies of Sulich discussed above. Thus, the combination of Sulich and Garneyer does not render claims 2-3 and 13-15 of the present application unpatentable.

The Applicant now turns to the rejection of claims 1-3, 5-6, 13-15 and 18 as being unpatentable over Garneyer in view of Peterson. Garneyer et al. teaches two permanently magnetized components 7_{a1}, 7_{a2} that are carried respectively, by two actuating members 3_{a1}, 3_{a2}. Garneyer et al. does not teach, nor suggest, that each of these magnets acts upon a single Hall effect sensor. Rather, each of the magnets operates on a respective pair of switching components (e.g., Hall effect sensors) so as to provide multiple switching points. In particular, the magnetized component 7_{a1} influences operation of switching components $8_{a1}'$ and $8_{a1}''$, whereas the magnetized component 7_{a2} influences operation of switching components $8_{a2}'$ and $8_{a2}''$. Garneyer at column 2, line 64 to column 3, line 9. As such, each magnetized component 7_{a1}; 7_{a2}, in combination with its associated switching components $8_{a1}'$, $8_{a1}''$; $8_{a2}'$, $8_{a2}''$, provides multiple switching points. Garneyer at column 3, lines 36-66. Garneyer et al. does not teach, nor suggest, arranging the magnetic components 7_{a1}, 7_{a2} in a contacting relation as recited in claims 1-3, 5-6, 13-15 and 18. Nor does Garneyer et al. recognize that contacting magnets provide a more precise switching point.

Peterson is directed to "an electric actuator apparatus and, in particular, an apparatus for actuating vehicle all-wheel steering systems." Peterson at Column 1, lines 5-8. As discussed previously, Claim 1 also requires that "said first and second magnets [be] in contact with each other." Applicant maintains that Peterson fails to teach or

suggest contacting magnets as recited by claim 1. To the contrary, Peterson repeatedly states that the magnets are spaced apart.

> A position sensor is mounted on the housing for sensing the position of the screw along a path of movement and generating a sensor signal representing that position ... **[T]he position sensor includes** a pair of Hall effect transducers mounted on the housing and spaced apart along the path and **a pair of spaced apart magnets** connected to the screw.

Peterson, column 2, lines 18-28 (emphasis added). Peterson reiterates the fact that the magnets are spaced apart:

> A magnetic actuator 68 is slidably mounted in the cavity 67 and connected at one end to the threaded shaft 65 ... **The actuator 68 includes a pair of longitudinally spaced apart magnets 71 and 72**.

Peterson, column 6, lines 1-2 (emphasis added). *See also* Peterson claims 3, 4, and 8. Overall, Peterson consistently stresses that the magnets are "spaced apart." Clearly, if the magnets are "spaced apart," they *cannot* be "in contact with each other," as recited, for example, in claim 1 of the present application.

In the embodiment shown in Figure 8 of Peterson, a gap is clearly present between the magnets 131 and 133. In describing this embodiment, Peterson states that the magnets "can be enclosed by a low friction material such as molded plastic." Peterson at Column 7, lines 33-35.

The Examiner interprets "can" as teaching that the magnets can touch. Applicants contend, however, that given the clear showing of a gap in Figure 8 and the

teaching of spaced magnets in the other embodiments of Peterson, this vague statement in Peterson does not teach the use of contacting magnets as recited in claim 1. Rather, this statement in Peterson appears to be an attempt to avoid implying that a specific type of material, i.e., a low-friction material such as a molded plastic, is required by the Peterson patent.

As is explained in the present application, placing the magnets in a contacting relationship, as recited in claim 1, provides a more precise switching point than would be achieved if the magnets were separated by some distance. *See* p. 12, lines 12-15. The precise switching point achieved by the claimed invention allows the switch to be actuated by an extremely small displacement versus a switch in which the magnets are separated by a gap. *See* p. 12, line 16 to p. 13, line 4. Peterson is not directed to a "switch." Instead Peterson uses the Hall effect sensors to detect linear position. As such, it makes sense that Peterson provides a gap between the magnets because separating the magnets may help to increase the region of linearity along the magnetic field, thereby allowing the Hall effect sensor to track with greater accuracy.

The Examiner states that because a plastic fills the gap between the magnets, "this means that the disclosure contemplates that a gap need not be filled by the material." However, this does not address the fact that a gap exists between the magnets in Peterson. Even assuming that the gap is not filled with plastic, there is, nevertheless, a gap between the magnets. Peterson simply does not teach, nor suggest, two magnets in contact with one another. Nothing in Peterson would lead one to believe that the magnets contact each other, or could contact each other.

Peterson fails to overcome the deficiencies of Garneyer, and vice versa. For the reasons set forth above (and previously during the prosecution of the present application), the combination of Garneyer and Peterson does not render claims of the present application unpatentable. Thus, the pending claims of the present application should be in condition for allowance.

In view of the foregoing, it is respectfully submitted that the pending claims define allowable subject matter. If anything remains in order to place the present application in condition for allowance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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